

Appl. No. 10/507,200
Amdt. Dated April 19, 2007
Reply to Office Action of January 19, 2007

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REMARKS

The Action indicates that the drawings are objected to; however the Action fails to state a reason for the objection. The drawings have been objected to in a prior Action as failing to show the subject matter of claim 11. Applicants have argued that the specification on page 2, starting at line 3 and page 4, starting at line 13 describes the features of claim 11, including a controller 11 and that Figure 1a shows the controller 11. Clearly one skilled in the art understands what a computer readable medium entails and Applicant shows a controller. When functional descriptive material is recorded on some computer-readable medium it becomes structurally and functionally interrelated to the medium and will be statutory. It is therefore respectfully requested the drawing objection be withdrawn.

Claims 1 to 20 are currently pending in the present application. Claims 1 to 10 are amended herein. Claims 3, 4, 6, 7, 8 and 9 are amended for purposes of form. No new matter is added by the amendments or the new claims.

Claims 1 to 20 stand rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,541,293 to Cagant et al. (hereinafter "Cagant") in view of U.S. Patent No. 6,075,837 to Roos et al. (hereinafter "Roos").

It is an object of the subject invention to maximize the dimensions of a reconstructable examination zone without increasing the dimensions of an X-ray detector.

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This object is achieved by means of the X-ray apparatus of claim 1, which includes means for changing the position and/or the orientation of the X-ray detector relative to the X-ray source and also a control unit for displacing the X-ray source and the X-ray detector along the trajectory and for controlling the position and/or orientation of the X-ray detector during the detection of the X-rays.

The invention is based on the idea that for many trajectories it is advantageous to change the position and/or the orientation of a rectangular X-ray detector relative to the X-ray source during the detection of the X-rays so that that the examination zone that can be reconstructed is maximized. The control of the position and/or orientation of the X-ray detector is then provided by a suitable control unit, the exact control being dependent on various factors such as, for example, the course of the trajectory and the ratio of the edges of the sensitive detector surface of the X-ray detector.

Accordingly, claim 1 is directed to an X-ray apparatus which includes: an X-ray source (2) for the emission of a conical X-ray beam, said beam being wide enough to completely irradiate the X-ray detector in all possible orientations and positions; an X-ray detector (3) for the multiple detection of the X-rays after their passage through an object to be examined, being arranged along an object axis (4), while the X-ray source (2) and the X-ray detector (3) are displaced along a trajectory; *means (12, 14, 15) for changing the position and/or the orientation of the X-ray detector (3) relative to the X-ray source (2);* and a control unit (11) for displacing the X-ray source (2) and the X-ray detector (3)

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along the trajectory and for controlling, rotationally on a central axis of said beam, orientation of the X-ray detector (3) during the detection of the X-rays (emphasis added).

As conceded by the Action, Cagant fails to teach a conical beam. Claim 1 has been amended to further claim that the conical beam is wide enough to completely irradiate the X-ray detector in all possible orientations and positions.

Cagant also fails to teach a means for changing the position and/or the orientation of the X-ray detector *relative to* the X-ray source. Changing the position and/or the orientation of the X-ray detector *relative to* the X-ray source is necessary for maximizing the dimensions of a reconstructable examination zone without increasing the dimensions of an X-ray detector. The Action states that Cagant teaches a means for displacing the receiver with respect to the patient along its axis of alignment with the source.

Applicants respectfully disagree with this characterization of Cagant. While Cagant discloses a means for displacing the receiver with respect to the *patient*, Cagant fails to teach a means for changing the position and/or the orientation of the X-ray detector relative to the *X-ray source*. Rather, Cagant simply teaches a source and receiver facing each other, the source and receiver being designed to continue to face each other during rotation about the central point. See Figures 1 and 2. Cagant does not disclose a means for changing the position of the receiver relative to the X-ray source.

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Roos, similar to Cougant, fails to teach a conical beam that is wide enough to completely irradiate the X-ray detector in all possible orientations and positions, as claimed in claim 1. Roos does not provide an X-ray detector that is movable relative to an X-ray source, thus Roos is not concerned with a conical beam that is wide enough to completely irradiate the X-ray detector in all possible orientations and positions. Roos also fails to teach a means for changing the position and/or the orientation of the X-ray detector *relative to* the X-ray source. In fact, Roos teaches in col. 7, lines 28 to 30 that the table, x-ray source and receptor all pivot together as a single unit.

Independent claims 2, 5 and 10 also claim both a conical beam that is wide enough to completely irradiate the X-ray detector in all possible orientations and positions, and changing the position and/or the orientation of the X-ray detector *relative to* the X-ray source. Accordingly, claims 2, 5 and 10 are patentable over the cited combination for at least the reasons discussed with respect to claim 1.

Therefore the cited combination fails to teach applicant's invention as claimed in claims 1, 2, 5 and 10. In view of the foregoing, independent claims 1, 2, 5 and 10 are patentable over Caugant and Roos when taken either singly under 35 U.S.C. § 102 or in combination under 35 U.S.C. § 103(a). Therefore, claims 1, 2, 5 and 10 are patentable over all of the references of record under 35 U.S.C. § 102 as well as 35 U.S.C. § 103(a). Accordingly, the rejections under 35 U.S.C. § 103(a) of claims 1, 2, 5 and 10 should be withdrawn and claims 1, 2, 5 and 10 should be allowed. Dependent claims 3, 4, 6 to 9,

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11 and 12 to 20 depend from claims 1, 2, 5 and 10 and provide further distinguishing features thereto. Thus, dependent claims 3, 4, 6 to 9, 11 and 12 to 20 are patentable over Caugant and Roos for at least the reasons discussed. Allowance of claims 1 to 20 is earnestly solicited.

Conclusion

In view of the foregoing, Applicants respectfully submit that the specification, the drawings and all claims presented in this application are currently in condition for allowance. Accordingly, Applicants respectfully request favorable consideration and that this application be passed to allowance.

Should any changes to the claims and/or specification be deemed necessary to place the application in condition for allowance, the Examiner is respectfully requested to contact the undersigned to discuss the same.

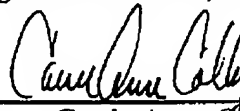
Applicants' representative believes that this response is being filed in a timely manner. In the event that any extension and/or fee is required for the entry of this amendment the Commissioner is hereby authorized to charge said fee to Deposit Account No. 14-1270. An early and favorable action on the merits is earnestly solicited.

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If the Examiner should have any questions concerning this communication or feels that an interview would be helpful, the Examiner is requested to call David Barnes, Esq., Intellectual Property Counsel, Philips North America Corporation at the number below.

Respectfully submitted,

David L. Barnes
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By: Carrie Anne Colby
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Date: April 19, 2006

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